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In This Issue



# 2021 Western Bean Cutworm Pheromone Trap Report

*(John Obermeyer)*

| | | WBC Trapped | | | | | | |
|---|---|---|---|---|---|---|---|---|
| County | Cooperator | Wk 1 6/17/21-6/23/21 | Wk 2 6/24/21-6/30/21 | Wk 3 7/1/21-7/7/21 | Wk 4 7/8/21-7/14/21 | Wk 5 7/15/21-7/21/21 | Wk 6 7/22/21-7/28/21 | Wk 7 7/29/21-8/4/21 |
| Adams | Roe/Mercer Landmark | 0 | 0 | 0 | 1 | | | |
| Allen | Anderson/NICK | 0 | 0 | 0 | 2 | | | |
| Allen | Gynn/Southwind Farms | 0 | 0 | 0 | 0 | | | |
| Allen | Kneubuhler/G&K Concepts | 0 | 0 | 0 | 0 | | | |
| Bartholomew | Bush/Pioneer Hybrids | 0 | 0 | 0 | 0 | | | |
| Boone | Emanuel/Boone Co. CES | 0 | 0 | 0 | 0 | | | |
| Clay | Mace/Ceres Solutions/Brazil | 0 | 0 | | | | | |
| Clay | Fritz/Ceres Solutions/Clay City | 0 | 0 | 0 | | | | |
| Clinton | Emanuel/Boone Co. CES | 0 | 0 | 1 | 1 | | | |
| Dubois | Eck/Dubois Co. CES | 0 | 0 | 0 | 0 | | | |
| Elkhart | Kauffman/Crop Tech Inc. | 0 | 0 | 2 | 6 | | | |
| Fayette | Schelle/Falmouth Farm Supply Inc. | 0 | 0 | 0 | 0 | | | |
| Fountain | Mroczkiewicz/Syngenta | 1 | 1 | 8 | 13 | | | |
| Hamilton | Campbell/Beck’s Hybrids | 0 | 0 | 0 | 0 | | | |
| Hancock | Gordon/Koppert Biological Systems | 0 | 0 | 0 | | | | |
| Hendricks | Nicholson/Nicholson Consulting | 0 | 0 | | | | | |
| Hendricks | Tucker/Bayer | 0 | 0 | 0 | | | | |
| Howard | Shanks/Clinton Co. CES | 0 | 0 | | | | | |
| Jasper | Overstreet/Jasper Co. CES | 0 | 2 | 6 | 22 | | | |
| Jasper | Ritter/Dairyland Seeds | 0 | 2 | 68 | 104 | | | |
| Jay | Boyer/Davis PAC | 0 | 0 | 0 | 0 | | | |
| Jay | Liechty/G&K Concepts | 0 | 0 | 0 | 0 | | | |
| Jay | Shrack/Ran-Del Agri Services | 0 | 0 | 0 | 0 | | | |
| Jennings | Bauerle/SEPAC | 0 | 0 | 0 | 0 | | | |
| Knox | Clinkenbeard/Ceres Solutions/Freelandville | 0 | 0 | 0 | | | | |
| Kosciusko | Jenkins/Ceres Solutions/Mentone | 3 | 0 | 30 | | | | |
| Lake | Kleine/Rose Acre Farms | 0 | 0 | 1 | 1 | | | |
| Lake | Moyer/Dekalb Hybrids/Shelby | 0 | 2 | 9 | 55 | | | |
| Lake | Moyer/Dekalb Hybrids/Scheider | 0 | 1 | 13 | 63 | | | |
| LaPorte | Rocke/Agri-Mgmt. Solutions | 1 | 1 | 16 | 55 | | | |
| Marshall | Harrell/Harrell Ag Services | 0 | 1 | 5 | 14 | | | |
| Miami | Early/Pioneer Hybrids | 0 | 1 | 10 | 41 | | | |
| Montgomery | Delp/Nicholson Consulting | 0 | 0 | 0 | | | | |
| Newton | Moyer/Dekalb Hybrids/Lake Village | 0 | 0 | 19 | 27 | | | |
| Porter | Tragesser/PPAC | 0 | 1 | 1 | 7 | | | |
| Posey | Schmitz/Posey Co. CES | 0 | 0 | 0 | 0 | | | |
| Pulaski | Capouch/M&R Ag Services/Medaryville | 1 | 0 | 0 | 5 | | | |
| Pulaski | Leman/Ceres Solutions | 1 | 0 | 4 | 23 | | | |
| Putnam | Nicholson/Nicholson Consulting | 0 | 1 | 0 | | | | |
| Randolph | Boyer/DPAC | 0 | 0 | 0 | 0 | | | |
| Rush | Schelle/Falmouth Farm Supply Inc. | 0 | 0 | 0 | 0 | | | |
| Shelby | Fisher/Shelby County Coop | 0 | 0 | 0 | 0 | | | |
| Starke | Capouch/M&R Ag Services/Monterey | 3 | 4 | 42 | 71 | | | |
| Starke | Capouch/M&R Ag Services, San Pierre | 3 | 0 | 17 | 26 | | | |
| St. Joseph | Carbiener/Breman | 0 | 0 | 2 | 4 | | | |
| St. Joseph | Deutscher/Helena Agri-Enterprises, Trap 1 | 0 | 0 | 0 | 3 | | | |
| St. Joseph | Deutscher/Helena Agri-Enterprises, Trap 2 | 0 | 0 | 0 | 2 | | | |
| Sullivan | McCullough/Ceres Solutions/Farmersburg | 9 | 0 | 0 | | | | |
| Tippecanoe | Bower/Ceres Solutions | 2 | 6 | 60 | 15 | | | |
| Tippecanoe | Nagel/Ceres Solutions | 0 | 0 | 0 | | | | |
| Tippecanoe | Obermeyer/Purdue Entomology | 0 | 1 | 0 | 4 | | | |
| Tippecanoe | Westerfeld/Bayer Research Farm | 0 | 0 | 0 | | | | |
| Tipton | Campbell/Beck’s Hybrids | 0 | 0 | 0 | 0 | | | |
| Vermillion | Lynch/Ceres Solutions/Clinton | 0 | 0 | 0 | | | | |
| White | Foley/ConAgra | 0 | 1 | 0 | 3 | | | |
| Whitley | Boyer/NEPAC/Schrader | 0 | 1 | 3 | 2 | | | |
| Whitley | Boyer/NEPAC/Kyler | 0 | 1 | 1 | 2 | | | |

* = Intensive Capture…this occurs when 9 or more moths are caught over a 2-night period

# Update On Disease Risk In Soybean And Corn In Indiana

*(Darcy Telenko)*

Recent rains and increased humidity across Indiana have increased the risk for foliar diseases to develop in both corn and soybean. Much of the corn throughout the state has begun to tassel and soybeans are flowering. We are starting to see common diseases in the lower canopy of corn, as we were out scouting this past week. A few diseases that I have seen included gray leaf spot, tar spot, northern corn leaf blight, common rust, and northern corn leaf spot in corn.

Diseases in soybean is currently low, but we have found a few frogeye lesions, downy mildew, and brown spot this past week. Since the soybeans are flowering it is time to scout for frogeye leaf spot. Management practices for frogeye are aimed reducing soybean susceptibility and inoculum availability. Infected debris from previous crops is the primary source of inoculum for this disease. Any practice that helps reduced or bury the infected residue will help reduced inoculum in a field such as fall tillage or soybean- corn crop rotation. There are a number of varieties available with frogeye resistance. Fungicide spray application after growth stage R1 can reduced severity, while applications made at R3 are considered most effective for frogeye. There are number of fungicides available to use for frogeye management see links below.

In addition, we are tracking the activity of tar spot (map-figure 1) and southern rust (map – figure 2). On the tar spot map you can see gray areas where we have detected the tar spot in past seasons. In Indiana we have confirmed tar spot for this season in Jasper, LaGrange, LaPorte, Noble, Porter, St. Joseph, and Vermillion. Tar spot is still at a low incidence and severity in these fields, but we suspect with the current weather conditions the disease will continue to spread.  We will continuing to monitor and provide updates.

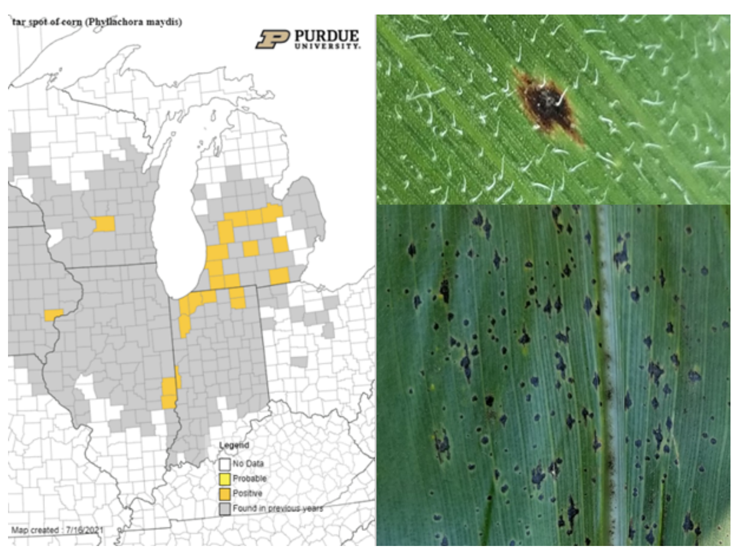


Figure 1. July 16, 2021 map of tar spot activity. Source: https://corn.ipmpipe.org/tarspot/ and images of tar spot on corn.

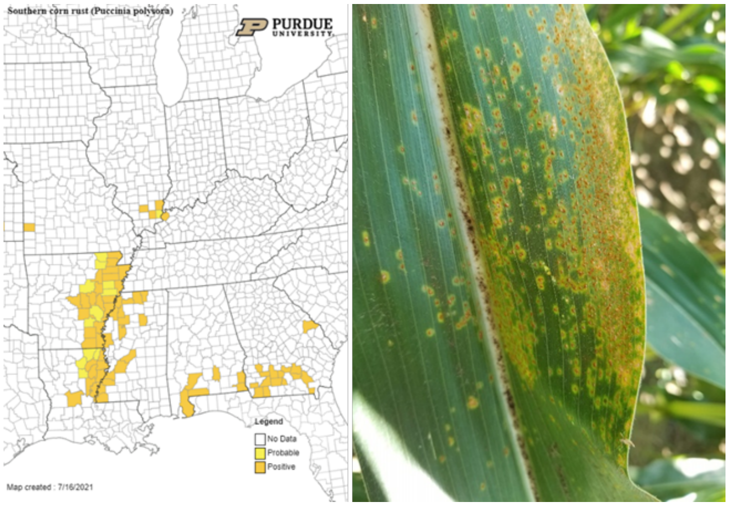

Figure 2. July 16, 2021 Southern corn rust map. Image of southern corn rust.

Continue to scout your field to determine if any of these diseases are present. Gray leaf spot, northern corn leaf blight and tar spot are the diseases that are most commonly managed by fungicides in Indiana. For gray leaf spot and northern corn leaf blight fungicides applied at VT-R1 are most effective at preventing yield loss. Scouting will help determine the level of disease pressure in a field. See link below for fungicide efficacy tables.

To make a decision for applying a fungicide there are four things I consider – 1. Disease risk in a field – do you have a previous history of the disease; 2. Current disease activity – do you find the disease in the lower canopy while scouting; 3. Weather conditions – will there continue to be favorable weather moisture and rain for foliar diseases? And 4. Return on investment – will the yield protected by a fungicide cover the additional cost of the application?

For fungicide recommendations please see the 2021 fungicide efficacy tables developed for both corn and soybean foliar diseases can be found at the following links:

- https://cropprotectionnetwork.org/resources/publications/fungicide-efficacy-for-control-of-corn-diseases
- https://cropprotectionnetwork.org/resources/publications/fungicide-efficacy-for-control-of-soybean-foliar-diseases

## Potato Leafhopper On Hemp

*(Marguerite Bolt, mbolt@purdue.edu)*

Potato leafhopper (*Empoasca fabae*) is back on hemp. This migratory species can cause a lot of damage to many different crop species, including hemp. The damage on hemp displays the characteristic hopper burn. Leaf tips become yellow and scorched. As damage progresses, leaves curl and twist. Plants may be stunted. It is unclear how excessive hopper burn can impact hemp yields at this point. We do not have economic thresholds for this pest in hemp.

Some of the hemp in the cannabinoid cultivar trial at Meigs farm was showing symptoms of potato leafhopper. We observed both adults and nymphs on the plants. Certain plants showed more severe symptoms. Fiber hemp grown in Martinsville also had hopper burn. Most of the damage was on the edge of the field.

We do not know which cultivars are more or less susceptible to damage, however, we are collecting data on which plants are showing hopper burn. With all the excessive rainfall, plant stress could be a factor. Many of the cultivars in the trial were bred in western states. They may not be suited for this environment, which could increase plant stress as well.

It is important for hemp growers to look for the potato leafhopper nymphs and adults on plants. This can be done by visually inspecting the plants, but they can move quickly when disturbed. A sweep net can also be used to capture the pest.

Chemical control is one way to manage the pest in non-hemp crop systems. This is not an option for hemp producers. Growers should reduce plant stress when possible. Most of the hemp is already in the ground, so growers should think about how they can reduce hopper pressure next season. One way to reduce pest pressure is to avoid field sites that are close to alfalfa and other susceptible crops. The use of tolerant or resistant varieties may be an option in the future.


Martinsville: Hopper burn on fiber hemp.


Hopper burn on cannabinoid hemp.

## Purdue Crop Chat Episode 21, Crop Update And Scouting

*(Dan Quinn)* & *(Shaun Casteel)*

Purdue Extension Soybean Specialist Shaun Casteel and Corn Specialist Dan Quinn are back for another episode of the Purdue Crop Chat

Podcast. On this episode, the guys discuss the most recent crop condition ratings and compare that to what they're seeing around the state.

Casteel also discusses the advantages to having a drone to scout your field at this point in the season.

## Should Supplemental Nitrogen Be Applied To Corn Following Heavy Rainfall?

*(Dan Quinn)*

Many locations in Indiana recently experienced rainfall totals in excess of 5 inches in a relatively short period of time. The heavy rainfall has resulted in significant water movement through the soil profile, saturated soils, and some significant flooding and ponding in certain areas. Since the majority of farmers across the state have completed their nitrogen fertilizer applications prior to the heavy rainfall, the question that is often asked is how much nitrogen did I lose? Determining the total amount of nitrogen that was lost and if and what amount of supplemental nitrogen is needed to help preserve corn yield is often a difficult question to answer because of the multiple factors that influence this decision. Factors that influence the amount of nitrogen lost include: 1) the timing, placement, rate and source of nitrogen fertilizer applied, 2) the amount of nitrate-nitrogen in the soil at the time of excess rainfall which also depends on time, temperature, moisture, and soil properties, 3) the use of a nitrification inhibitor which can delay conversion of ammonium to nitrate, 4) the duration of saturated soil conditions, and 5) the growth stage of the corn plant and the amount of nitrogen the plant has already taken up.

The two main mechanisms for nitrogen loss following heavy rainfall and flooding is from leaching of soil nitrate below the rooting zone and denitrification. Nitrogen in the form of nitrate in the soil is negatively charged and has the ability to be physically moved or leach with soil drainage following significant rainfall events. This is typically common in more coarse-texture, or sandier soil types. In soils which are much fine-textured, poorly drained, and heavier, or low-lying areas of fields where ponding occurs, the most common cause of nitrogen loss is from denitrification. Denitrification occurs when soil nitrate is converted to nitrogen gas by soil bacteria as a result of the depletion of oxygen caused by saturated soil conditions. Two to three days of soil saturation is typically required for soil bacteria to begin the denitrification process (Lee et. al., 2007).

Image 1: Canopy of corn exhibiting significant nitrogen deficiency.

**Denitrification**

For denitrification to occur, nitrogen must be in the nitrate form. Therefore, it is important to understand which source of nitrogen fertilizer was applied and when was it applied. At this point in the growing season (late June, early July), it can be assumed that late fall nitrogen applications and preplant nitrogen applications have been completely converted to nitrate. Table 1 illustrates the potential length of time that it takes various nitrogen fertilizer sources to convert to ammonium and nitrate. The rates of conversion are dependent on soil temperature and aeration (Nielsen, 2004). Therefore, the higher the soil temperature, the faster nitrogen is converted from ammonium to nitrate. The use of a nitrification inhibitor (e.g. nitrapyrin) can help delay the conversion of fertilizer nitrogen into the nitrate form.  A nitrification inhibitor can potentially delay the conversion of ammonium to nitrate by 2 to 6 weeks depending on environmental conditions (Omonode and Vyn, 2013; Havlin et al., 2014). However, this conversion delay is likely closer to 2 weeks at this time in the growing season due to warmer soil temperatures. A urease inhibitor can extend the conversion of urea to nitrate by delaying the time period it takes for urea to hydrolyze to ammonium by 7 to 10 days.

Table 1. Approximate time until fertilizer nitrogen is in the nitrate form (Havlin et.al., 1999)

| **Fertilizer Source** | **Approximate Time Until Ammonium** | **Approximate Tim Until Nitrate** |
|---|---|---|
| Ammonium sulfate, 10-34-0, MAP, DAP | 0 weeks | 1 to 2 weeks |

| Fertilizer Source | Approximate Time Until Ammonium | Approximate Tim Until Nitrate |
|---|---|---|
| Anhydrous ammonia | | 3 to 8 weeks |
| Urea | 2 to 4 days | 1.25 to 2.5 weeks |
| UAN | 50% from urea in 2 to 4 days<br>25% is ammonium, 0 weeks | 50% in 1.25 to 2.5 weeks<br>25% in 1 to 2 weeks<br>25% is nitrate, 0 weeks |

Soil temperature and the length of time the soil is saturated also influences the amount of nitrogen lost from denitrification. At soil temperatures between 55 to 65 degrees Fahrenheit, approximately 2 to 3% of soil nitrate is lost per day under saturated conditions. At soil temperature greater than 65 degrees Fahrenheit, approximately 4 to 5% of the soil nitrate is lost per day under saturated conditions. Also, it takes approximately 1 to 2 days for a saturated soil to reach anaerobic conditions. Therefore, if a sidedress application of 28% UAN was made 3 weeks ago at a rate of 150 lbs N/acre, then using Table 1 would suggest 100% of the UAN has been converted to nitrate since application. Thus, if the soil remained saturated for 6 days at a soil temperature greater than 65 degrees, then it would be expected that a total of 20% [5% per day X 4 days (subtracted 2 days for the lag time until a saturated soil reaches anaerobic conditions)] of the 150 lbs N/acre was denitrified or lost (approximately 30 lbs N/acre). It is also important to note that these calculations are strictly estimates and may not reflect actual N losses because so many factors affect conversion to nitrate and loss from the soil. In addition, corn that is submerged or ponded for 3 to 4 days may also experience significant physical damage which may limit the benefit of a supplemental nitrogen application.

**Leaching**

Similar to N loss from denitrification, determining the amount of N loss from leaching is also dependent on the amount of nitrogen fertilizer applied that is in the nitrate form (Laboski, 2016) (Table 1). Therefore, if 150 lbs of N/acre was applied as a sidedress application of UAN containing a nitrification inhibitor 1 week ago, then only 25% of the UAN is likely in the nitrate form, which means approximately 37.5 lbs N/acre has the potential to be leached following a heavy rainfall. Keep in mind that the crop has also taken up some nitrogen since the nitrogen fertilizer was applied so the potential N loss from leaching would be less than 37.5 lbs N/acre. Furthermore, nitrogen leaching is also dependent on soil drainage patterns and the total amount of water required of a soil to reach field capacity (White, 2018). Greater nitrogen loss from leaching is likely to occur on more coarse-textured, sandier soil types, compared to more fine-textured, loam and clay soil types. Established rooting depth is also important when understanding potential nitrogen loss from leaching. Just because nitrogen has downward in the soil profile, doesn't mean the nitrogen has moved out of the root zone, especially during seasons where dry conditions occur early and rooting depth is increased.

**Supplemental N Applications**

The thought processes and calculations presented above can help guide farmers on the amount of nitrogen fertilizer required if a supplemental nitrogen fertilizer application is needed to maintain corn yield. Previous research has indicated that rescue applications of nitrogen fertilizer in the late vegetative growth stages can help preserve corn yield if nitrogen fertilizer is lost. If visual nitrogen stress is observed in corn prior to pollination, then a supplemental N fertilizer application will likely be needed. Furthermore, it is important to understand that flooding and ponding in fields is spatially highly variable. Therefore, supplemental nitrogen applications need to be determined as economical for the crop and may need to be applied spatially and at varying rates across the field to avoid over application and unnecessary compaction to otherwise healthy plants in the field where saturation may not have occurred (Nielsen, 2004).

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## Kernel Set Scuttlebutt

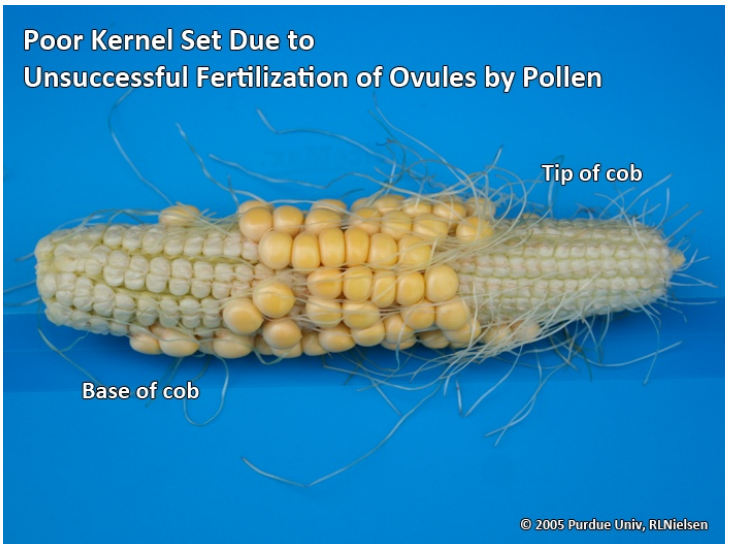
*(Bob Nielsen)*

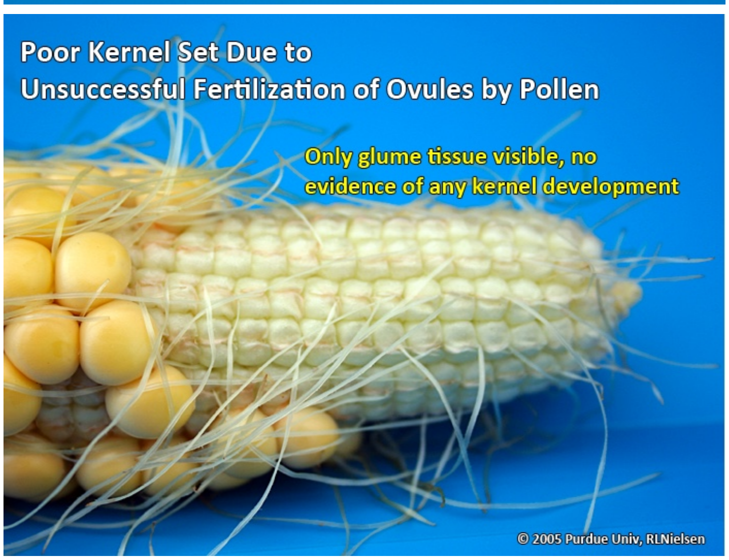
"Scuttlebutt": The cask of drinking water on ships was called a scuttlebutt and since sailors exchanged gossip when they gathered at the scuttlebutt for a drink of water, scuttlebutt became U.S. Navy slang for gossip or rumors. A butt was a wooden cask, which held water or other liquids; to scuttle is to drill a hole, as for tapping a cask.

Nautical Terms and Phrases, NAVAL HISTORY and HERITAGE CENTER, Washington DC 20374-5060. https://www.history.navy.mil/content/history/nhhc/browse-by-topic/heritage/speak-like-a-sailor/nautical-terms-and-phrases-their-meaning-and-origin.html [URL accessed Aug 2020].

The post-pollination scuttlebutt overheard in coffee shops throughout Indiana during late summer often revolves around the potential for severe stress that might reduce kernel set or kernel size in neighborhood cornfields. Growers' interest in this topic obviously lies with the fact that the number of kernels per ear is a rather important component of total grain yield per acre for corn.

Poor kernel set, meaning an unacceptably low kernel number per ear, is not surprising in fields that are obviously severely stressed by drought, but can also occur in fields that otherwise appear to be in good shape. Good or poor kernel set is determined from pollination through the early stages of kernel development; typically 2 to 3 weeks after pollination is complete.




Problems with kernel set stem from ineffective pollination, ineffective fertilization of the ovaries, kernel abortion, or all three. Distinguishing the symptoms is easy. Determining the exact cause of the problem is sometimes difficult.

## Potential Yield Loss

The potential loss in grain yield caused by lower kernel numbers per ear can be estimated using the formula of the so-called Yield Component Method first described by the Univ. of Illinois many years ago (Nafziger, 2017; Nielsen, 2018b). For example, the loss of only 1 kernel per row for a hybrid with 16-row ears and a stand count of 30,000 ears per acre would equal a potential yield loss of approximately 5 to 6 bushels per acre (1 [kernel] x 16 [rows] x 30 [thousand ears per acre] divided by 85 [thousand kernels per bushel]).

## Ineffective Pollination / Fertilization

Poor kernel set may be caused by ineffective pollination (the transfer of pollen from the tassel to the silks) and/or the subsequent failure of the pollen's male gametes to fertilize the female gametes of the ovules on the cob. Ineffective pollination is characterized by an absence of noticeable kernel development. In other words, all you see is cob tissue. Pollination problems may be due to several stress factors, sometimes working together to influence kernel set.

Severe drought stress, aggravated by excessive heat, can delay silk emergence to the extent that pollen shed is complete or nearly complete by the time the silks finally emerge from the husk. Without a pollen source, ovule fertilization cannot occur.

Persistent severe silk clipping by insects such as the corn rootworm beetle or Japanese beetle throughout the active pollen shed period can also limit the success of pollination. The simultaneous effects of severe drought stress on silk emergence can easily amplify the consequences of severe silk clipping.



Severe drought stress coupled with excessive heat and low humidity can desiccate emerged silks to the point that they become non-receptive to pollen grain germination. I suspect this is low on the list of possible stressors for Indiana most years (because of our typically high humidity levels), but may play a role in some fields once in a while. Similarly, I doubt that pollen viability is usually NOT an issue for Indiana cornfields because temperatures in the low 90's are usually not great enough to kill pollen.

Consecutive days of persistent rainfall or showers that keep tassels wet for many hours per day over several days can delay or interfere with anther exsertion and pollen shed. Such weather does not typically occur in Indiana, but the remnants of Hurricane Dennis that visited many parts of Indiana in early July of 2005 influenced kernel set in some fields that were trying to pollinate during that week as a result of the many days of showery humid weather (coupled with the excessive cloudiness and its negative effect on photosynthesis).

Exceptionally long potential ears resulting from good weather during ear size determination sometimes fail to pollinate the final kernels near the tip of the cob. Remember, butt silks emerge first and tip silks emerge last. With oversized ears, sometimes tip silks emerge after all the pollen has been shed.

An increasingly common hybrid trait in recent years is an aggressive silking habit. The trait is associated with drought tolerance because silk emergence delays are less likely under severe drought stress and, thus, silk/pollen synchrony is better retained. However, favorable weather during silk elongation tends to result in silks emerging from the husk leaves several days prior to the availability of pollen from the tassels. Such unusually early silk appearance can result in silk aging / deterioration prior to the availability of pollen. The typical kernel set pattern associated with this situation is blank cob tissue near the basal end of the cobs.

## Kernel Abortion

Poor kernel set can also be caused by kernel abortion following successful fertilization of the ovules on the cob. In contrast to ineffective pollination or fertilization, initial kernel development obviously precedes kernel abortion, so the symptoms are usually shriveled remnants of kernels that may be whitish- or yellowish-translucent.

The causes of kernel abortion are generally those stresses that greatly reduce the overall photosynthetic output of the plant during the first several weeks after the end of pollination as the kernels develop through the blister (R2) and milk (R3) stages of development. The risk of kernel abortion decreases significantly after the R3 stage of kernel development. Obvious photosynthetic stressors include severe drought & heat stress, consecutive days of excessively cloudy weather and significant loss of photosynthetically active leaf area (e.g., hail damage, leaf diseases, insect damage, nutrient deficiency).

Warm nights during pollination and early grain fill may indirectly affect survival of developing kernels. Research suggests that the increased rate of kernel development due to warmer temperatures lowers the available amount of photosynthate per unit of thermal time; which then becomes a stressor to kernel development particularly at the tip of the ear, leading to kernel abortion (Cantarero et al., 1999).

## Final Food for Thought

A plethora (meaning a whole lot) of blank cob tips can quickly ruin the joy of walking a cornfield in the middle of August. Before getting too bent out of shape over the missing kernels, remember to count the number of harvestable kernels on those ears. Sometimes, ears exhibit 1 to 2 inches of blank tips; yet still contain 16 rows by 30 to 35 harvestable kernels per row. Those are perfectly acceptable ear sizes in a year where dry weather has been a concern.

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# First Time Indiana Is Drought Free Since Early June 2020

*(Beth Hall)*

It is amazing to think that some part of Indiana has been in at least the *Abnormally Dry* category of drought on the US Drought Monitor for over a year.  While it has not always been the same parts of the state, certainly northern Indiana has been the most consistently dry. Recently, however, the state has been in a wet pattern, helping to relieve most precipitation deficits. It seems when one half of the United States (US) is in a rather stagnant weather pattern, the other half experiences the opposite.  Unfortunately, the western half of the US has been extraordinarily warm and dry.  This is due to a blocking high pressure system that is forcing the jet stream to maintain a rather consistent pattern that encourages relatively cooler and wetter conditions in the eastern half of the country.  Should that blocking high break apart or weaken, Indiana will likely see more typical transitions between wet and dry groups of days.  It is possible that the weather patterns will shift and Indiana will be in an extended drier phase, but there are no strong indications at this time that an extended dry period will occur any time soon.

The latest climate outlook for the rest of July has too much uncertainty for most of Indiana with respect to temperature (i.e., climate models are favoring neither above- nor below-normal temperatures for the rest of the month).  Precipitation for the rest of July is also not favoring abnormally wet or dry conditions with the exception of southeastern Indiana that has slightly enhanced chances for wetter-than-normal conditions.

The three-month climate outlook – representing August-October – has equal chances for above, below, and normal precipitation amounts (Figure 1).  However, there are enhanced chances for above-normal temperatures during this extended period (Figure 2).  If the temperature outlook comes to fruition, that would imply increased evapotranspiration rates that could lead to abnormally dry or even moderate drought conditions depending upon the timing of any precipitation events.

Figure 1. National three-month climate outlook of precipitation relative to normal for August through September (source: Climate Prediction Center).

Figure 2. National three-month climate outlook of temperature relative to normal for August through September (source: Climate Prediction Center).

Modified growing degree-day accumulations now range from about 1300 to 1800 units across the state, with higher amounts to the south (Figure 3).  From a climatological perspective, those amounts are slightly below normal across southern Indiana and slightly above normal for Indiana’s northernmost counties.  However, departures are rarely greater than 100 units.  Figure 4 illustrates the accumulation of MGDDs from April 1 through July 14th of this year compared to the most recent four years.

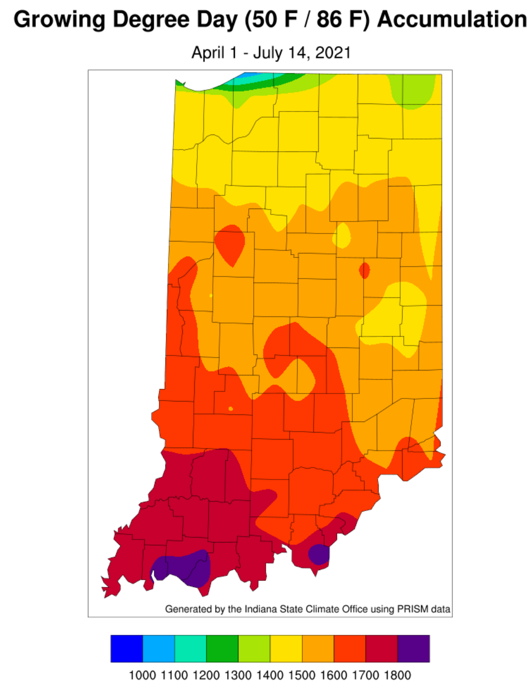
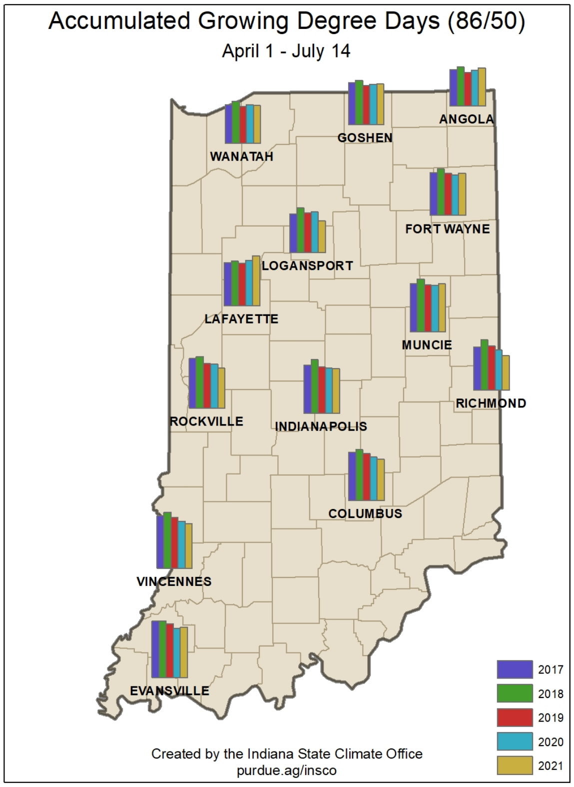



Figure 3. Modified growing degree day accumulations from April 1 to July 14, 2021.

Figure 4. Comparison of 2021 modified growing degree day accumulations from April 1 – July 14 to the past four years.



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